STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:	)	Docket No. 99-DIST-GEN-(2)
	)	
Exploring Revisions to Current Interconnection	)	
Rules Between Investor-owned and	)	Energy Commission Distributed
Publicly-owned Utility Distribution Companies	)	Generation Strategic Plan
And Distributed Generators	)	
	)	
Evaluating CEQA Procedures for Siting	)	
Distributed Generation Facilities	)	

COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY ON SITING COMMITTEE PROPOSAL TO DEVELOP A STRATEGIC PLAN FOR DISTRIBUTED GENERATION

1. General Comments On The Outline

On January 28, 2002, PG&E submitted written comments on the Commission's January 16, 2002 workshop report, and David Rubin, PG&E's Director of Service Analysis, appeared on a panel at the CEC workshop on February 5, 2002, to further address issues related to distributed generation (DG). PG&E appreciates the opportunity to further participate in helping the CEC develop its Strategic Plan for Distributed Generation by providing these comments on the draft outline issued February 21, 2002. These comments elaborate upon those submitted earlier, and also respond to specific questions posed in the Committee's Draft Outline.

In developing its Strategic Plan, the Commission must face the question of "What is the appropriate role of government in encouraging and/or subsidizing certain DG technologies versus other available means of balancing supply and demand and ensuring reliability of the transmission and distribution systems in the state?" In the last two years, spurred largely by the wholesale electricity crisis and a concern that California lacked sufficient generation to meet demand, the state enacted legislation providing for a variety of subsidies for certain types of DG technologies, which resulted in programs providing hundreds of millions of dollars in customer

rebates, waivers of utility standby charges, new tax incentives, and extensions of the eligibility requirements for customers to take advantage of net metering. These subsidies were in addition to numerous forms of encouragement that were already available in the form of tax breaks for certain DG technologies and lower gas rates and exemptions from CTC obligations for customers installing DG units in cogeneration applications.

PG&E has long supported the right of customers to install generation on their side of the meter, provided it is done in accordance with safety and reliability considerations. PG&E has also actively participated in a CEC-led effort to streamline the interconnection rules for DG projects, and has established a department that is singularly focused on interconnecting both small and large generating projects. Such efforts continue. PG&E also recognizes the desire to promote "clean" DG technologies for environmental reasons, and supports the principle that generation of all sizes can help to keep supply and demand in balance.

However, while the state still faces generation challenges, the worst of the supply crisis is apparently over, and it is time to step back and evaluate what kinds and levels of subsidy of DG are prudent.

The current "calm" represents a golden opportunity for this Commission, in conjunction with the California Public Utilities Commission (CPUC) and other state agencies, to undertake a thorough and comprehensive evaluation of the cost-effectiveness of promoting DG versus new central station technologies and/or demand-side programs (energy efficiency and load management) which can achieve the same goals at perhaps lower costs and with more benign environmental consequences. Electricity is expensive in California and a strategy of subsidizing more expensive generation sources will only lead to further cost increases for customers, in the form of higher rates or higher taxes. Literally hundreds of millions of dollars of such subsidies are now being provided, and new pleas for further subsidies are made every day. Without undertaking a thorough analysis regarding the level of subsidies already in place, it will be impossible to determine whether DG is already over-subsidized, much less whether additional subsidies are warranted, and if so, for what purpose and how long.

In addition, the Commission in developing its DG Strategic Plan must carefully evaluate the transfer effects of any policies designed to subsidize DG located at customer sites. Is it good public policy, for example, to provide financial encouragements that result in residential customers subsidizing commercial/industrial customers' DG installations, or poor residential customers subsidizing the DG installations of wealthier residential customers that can afford

such units (notwithstanding the subsidies)? The Draft Outline's Vision Statement says "Distributed generation will be an integral part of the California energy system, providing consumers and energy providers with *affordable*, clean, reliable, and readily accessible energy services" (emphasis added). If "affordable" means the cost is lower than central station and demand-side alternatives only after subsidies are provided, then the Commission must take into consideration the cost-shifting that must accompany such subsidies, as well as income transfer effects.

The draft outline states that "It is the mission of the Energy Commission to develop programs and policies that will effectively promote and deploy distributed generation technologies that benefit energy consumers and the electricity grid in California." Unless the CEC has reason to believe that DG will become less expensive, more efficient, reduce pollution, or achieve some other identified policy goal, and requires some additional interim governmental support in order for DG to achieve or accelerate these objectives, it is not clear what objective is served by the state promoting DG. The CEC's Strategic Plan should identify the policy objectives which the state desires to advance, and the best means of applying limited ratepayer and/or taxpayer resources to achieve these objectives.

Finally, PG&E notes that a number of the issues contained in the Draft Outline are pending before the CPUC in the Distributed Generation OIR proceeding. Those issues have been the subject of extensive hearings and briefings, and are pending decision by the CPUC. PG&E urges this Commission, in the development of its Strategic Plan, not to pre-judge those issues or prematurely develop policies that could be at odds with the ultimate determinations by the CPUC.

2. Comments on "Deployment Issues and Opportunities" Section

The outline states that this section of the CEC's Strategic Plan will "identify the major barriers hindering the deployment of distributed generation in California." Curiously, however, none of the items listed in the sections that follow address the key "barrier" to DG, which is the fact that this generation is usually more expensive than central station or demand side alternatives, and/or is just not the right "tool for the job" for many customers. The failure to mention these "sellability" issues, combined with the current outline, suggests that the Commission intends to make a finding that issues such as "interconnection," or "grid effects" are the "barriers" that have prevented greater deployment of DG. However, neither is to blame for the fact that more customers have not elected to install DG. Indeed, recent experience has

demonstrated that even when such projects get free interconnection, have half the cost paid for by the utilities, are excused from paying standby changes, are excused from paying for most use of the distribution system by net metering rules, and have an additional 15% of the cost of the project paid for by tax incentives, that even with these incentives, the amount of load served by DG has remained very small.[1] Thus, if the CEC is going to make a fair presentation of the barriers hindering the deployment of this generation, it must consider other attributes of the current technologies.

A discussion of the issues included in the draft Strategic Plan follows.

A. Interconnection Issues

- **Can interconnection rules be standardized throughout California?**
- **Should California support development of national interconnection standards?**
- **Can interconnection be made more user-friendly to the end-use consumer?**
- **Can a substantial amount of DG be interconnected in both radial and networked distribution systems?**
- **Are there safe, reliable and cost-effective interconnection solutions for radial and networked distribution systems?**
- **Can interconnection solutions be deployed in a timely manner?**
- **Is a single DG unit compatible with end-use equipment or other DG equipment?**

In order to get a sense of where to focus efforts in improving deployment and opportunities related to DG interconnection, a review of where we currently stand is useful.

The CEC's efforts have created a good foundation from which to build policies to lead to more efficient interconnection practices. The root of this effort is the ongoing interconnection workshop process, which is comprised of utility representatives, DG vendors and manufacturers, regulatory representatives and other interests. These workshops have proven to be a productive forum to openly exchange ideas and develop products that are in the interest of all parties. Workshops products so far include a standardized Rule 21 that is more process oriented, DG

[1] Even though the load served by DG is small, the number of customers installing DG has gone up substantially, particularly for net metering installations, from perhaps 60 per year in PG&E's service territory in the year 2000 to perhaps 2000 customers in 2002. Depending on one's perspective, this can be viewed as a huge success for this industry.

testing and certification standards, advocacy of IEEE certification efforts leading to new standards, and standardized[2] interconnection application and interconnection documents. Work in progress includes further improvements on interconnection processes and technical requirements. This effort has helped develop a mutual understanding between DG interests and utilities of the complexities of DG interconnection applications and electrical system operations and protection.

PG&E participates in the development of IEEE national standards dealing with certification and other DG related interconnection standards. Areas where further support at the state level would enhance these initiatives are:

- CEC's, DG manufacturers' and utilities' continued support to 'certify' DG products. This often eliminates the need to perform individual engineering review of the interconnection. Exceptions are where there are 'multiple' units or where other screens of the 'simplified' interconnection process are not met.

- Training information materials: (1) standardized information packages. The workshop group is looking at an interconnection booklet that might contain financial analysis tools, "how to" apply, "Q & A", etc. This should be supported by the CEC through proper resource allocation and adequate funding. (2) Just as the utilities are operating under a consistent set of rules, there might be a code of standards for DG vendors to follow regarding how DG and interconnection is represented to customers. (3) City and counties could be more familiar with DG in general and with interconnection standards. The focus should be with building departments and an investigation into how these agencies could help with customer education and interconnection process improvement.

- Continued development of web-based information and tools for use by customers, vendors and manufacturers.

- It may be useful for California public agencies in the electric business to adopt similar interconnection rules/procedures/standards as the IOUs. If the CPUC or the CEC have the power to implement such a change, they could do so; if not, then they may wish to pursue legislation to this effect. After all, a large percentage of the electric customers in California are not served by investor-owned utilities.

- A newsletter produced by PG&E's Generation Interconnection Services Department, *Generator News*, which is one way to support PG&E's goal to continuously improve customer satisfaction by proactively providing customers with useful and credible energy information. An electronic subscription to *Generator News* is available at www.pge.com/generatornews. This is part of a value proposition whereby funding could

[2] PG&E, SDG&E and SCE filed and received approval from the CPUC for a substantially uniform Rule 21 in late 2000, and a subsequent revision in early 2001. Certain municipal utilities, such as SMUD and the City of Riverside, have been actively involved in the workshops. Others have not, and many municipal utilities in California have interconnection rules different that those developed by this agency. Various differences remain between the interconnection rules of each of the three major investor-owned electric utilities in the state.

be made available to support further work with customers to help determine how to prioritize best efforts related to DG interconnection.

- Continued use of CEC workshops to assure consistent use and application of rules among utilities and vendors;

- Continued support of demonstration projects, and the CEC's initiative to monitor operating DG facilities. These projects provide valuable information which help bring engineering theory in line with practice, thus helping to advance technical interconnection policies.

All of the above is in the spirit of developing efficient DG interconnection practices that are standardized to the extent practical throughout California. The workshop participants have learned that, due to the uniqueness of business and operating practices among utilities, consistent interconnection rules can be standardized only to a certain extent. Just as city and county building departments often have unique requirements that impact DG interconnection utility business structures govern processes that are different from one another. Rather than try to fit a single standard across the nation, an effort should be made to study the best practices across the nation and try to incorporate those into existing standards, policies and practices. The effort the CEC embarked on in late 1999, for example, built on work started in New York and Texas. The CEC working group continues to look at these documents in its ongoing effort to improve on the DG interconnection process. The one-size-fits-all approach is not entirely appropriate with regard to a national interconnection standard. PG&E is interested in continuing its contribution to the IEEE work and assisting in an effort to determine what national standards might be appropriate.

The CEC should continue to support this effort by advocating use of its work in the CEC workshops as the guiding document for any such national standardization effort, and allocating additional resources as appropriate.

The success of the CEC's workshop process has been the participation of all interested parties. To be sure, interconnection issues can be complex. It is essential that the workshop group continue to maintain the participation of industry representatives who are knowledgeable about the technical issues and who are well versed in the activities of the IEEE and other nationally recognized work that is currently under way.

B. Environmental Issues

- **Should the state give preference to "clean" DG technologies?**

Yes, the state should give a preference to cleaner technologies over more polluting technologies. However, the state needs to take a hard look at whether it should be subsidizing DG technologies which are not currently as clean as new combined cycle central station plants. Perhaps those giving these subsidies believe that they "might" somehow reach that status by 2007, although there has been no sign that this will occur for technologies other then photovoltaic and possibly fuel cell technologies. It may be preferable to spend research dollars on making these DG technologies competitive in an environmental sense with central station units, and not provide "clean" subsidies to units until they have proven they really are so.

Also, DG should be evaluated on an environmental basis relative to demand-side alternatives like energy efficiency and (for peak-shaving purposes) load management, which can also close the supply/demand gap and is likely to do so with lower (or no) emissions.

- **Can air emissions from DG become as clean as central station power plants by 2007?**
- **Can air emissions from diesel backup generators become as clean as natural gas-fired generators?**

PG&E does not know what tomorrow's technology will look like. All it knows is that right now, many DG technologies create substantially higher levels of pollution than modern central station generation. Clean DG technology does exist today, such as photovoltaic power, but such projects remains very expensive, even with the enormous subsidies now available to such projects. Indeed, as discussed in PG&E's opening comments, we fear that the availability of these many incentives has lead to substantial increases in the prices charged by DG vendors, rather than causing the development of more cost effective and cleaner technologies. Indeed, we do not know whether investing even a billion dollars a year in DG customer incentives will create a single cost-effective and clean DG technology.

C. Grid Effects Issues

- **Would a high penetration of DG have a beneficial/detrimental impact on the T&D system?**

It can either be neutral or detrimental depending on the characteristics of the distribution circuit where the high penetration of DG units will be interconnected.

It is neutral if the high penetration of DG units is concentrated in line sections where the loads are also high-density types (commercial, industrial type) of a magnitude substantially larger than the generation outputs. With the load being reduced, it can provide some beneficial results such as reducing line losses. However, as PG&E explained in testimony in the DG OIR, the value of these potential benefits is very small.

A high penetration of DG can be detrimental if concentrated in the line sections where the loads are low density, scattered types (residential). The output power of the high penetration of DG units will flow back in the opposite direction toward the substation which may create out-of-limit voltage drop, overloading of line equipment, excessive line losses, and leading or lagging power factor.

- **Is there a limit to the level of DG that the grid can absorb without adverse impacts**?

Yes. Some of the adverse impacts created by DG units can be exceeding operating voltage levels, overloading of line equipments, and having the DG unit's protective devices not coordinated with the utility's protective devices. This is a case-by-case computation. It is hard to identify a single threshold level because of the variations in circuit characteristics.

- **Are there any limitations on bi-directional power?**

Yes, the limitation is based on the current transformer (CT) rating within the equipment.

- **Should distribution design philosophy and design tools be modified to accommodate DG?**

No, utility distribution design philosophy and design tools should not change. Distribution system are designed and in placed for a long period, and are designed to serve

customer load in the most economic way practical. If design philosophy is changed for DG, it could cost customers more, depending on the nature of the change.

- **Can engineering studies be eliminated, standardized, or streamlined?**

It depends. Such studies can be substantially eliminated if there is no export of power. They cannot be completely standardized because of the different characteristics of the distribution circuits. They can be streamlined if CEC continues the process of developing clear and common instructions for interconnections and equipment certification. As discussed above in the interconnection section, such efforts have already been simplified and streamlined, and more work remains possible. However, it is essential that such studies not be eliminated when needed, and that maintaining the integrity of the distribution system continue to remain a high public policy priority.

- **Can microgrids be effectively utilized?**

This topic was the subject of extensive discussion in distributed generation and distribution competition rulemaking conducted by the CPUC. In that proceeding, and in other forums, various proponents have argued for the right to own and operate extensive private distribution systems free of any regulatory oversight, in place of utility distribution systems. They have argued, just as generators did at the time, that a private marketplace free of regulatory oversight was certain to achieve customer savings over utility service. However, as the generation marketplace has clearly demonstrated, unregulated suppliers do not necessarily supply products at lower prices. The CPUC concluded that such private distribution systems can raise a variety of safety, reliability, and regulatory issues, and that creating distribution competition can adversely impact the costs of other customers. (CPUC Decision 99-10-025.) The concept of private microgrids serving multiple customers is not one that should be embraced by this Commission as a matter of policy, particularly when rate, reliability, safety, and regulatory issues associated with such service have not been addressed, and are beyond the jurisdiction of this Commission.

D. Market Integration and Regulatory Issues

- **Can market rules be modified to allow DG to better participate in current markets?**
- **Can transaction costs associated with interconnecting and permitting be reduced?**

It is not clear what is meant by these questions. If they are asking about interconnection rules, the topic is addressed above.

- **Is it in the State's interest to promote DG?**

It is time for the state to step back and do the analysis and find out! The CEC itself has been skeptical about whether the largest such promotional effort is in the public interest. In 2001, the CPUC's Energy Division proposed that utilities spend an additional $125 million per year on self-generation incentives, in addition to the incentives already provided by this agency. The CEC filed comments on this proposal on on February 13, 2001, which stated:

> A recent report (the Report) by the staff of the California Public Utilities Commission (CPUC) contains an analysis of the costs and benefits of distributed generation… However, an examination of the Report's analysis shows that this very favorable benefit/cost ratio is based on some assumptions that are, at best, problematic. The biases introduced by these problematic assumptions are likely to be very large-in fact, so large <u>that it seems probable the benefit/cost ratio is actually less than one.</u>

CEC comments filed in CPUC Rulemaking 98-07-037, page 34 (emphasis added). The CPUC did not follow the CEC's suggestion, or allow hearings on cost effectiveness, but instead simply adopted its staff proposal, notwithstanding a statutory duty to coordinate with the CEC on the AB 970 programs. However, the questions asked by the CEC last year are even more in need of being addressed now. The energy prices in the market place are much lower now than the prices used in the report that formed the basis for the CPUC program. In addition, there is much less need for new supply now than there was in 2001. The most recent supply report by this Commission, dated December 19, 2001, concluded that supply challenges still remain, but made clear that the supply forecast is much better now than it was in early 2001. The CEC and the CPUC need to find the most cost-effective ($/kW and kWh produced) and environmentally-effective (air emissions/kWh produced) solutions. Pursing continued unquestioned subsidization of DG, without any research as to whether these investments are sound public policy, risks wasting literally hundreds of millions of dollars of public funds.

- **How can tariffs and rate be designed to provide better price transparency to DG?**

The question should be phrased as "Is some aspect of current rates or tariffs insufficiently transparent? In what way? What goals would be served by revising tariffs and rates to provide increased price transparency to DG?" PG&E is not aware of any such need for a change.

- **Are there too many public subsidies being provided for DG?**

It is quite possible, but careful analysis is needed to make such a determination. See response above to the question, "Is it in the State's interest to promote DG?" The CEC, in conjunction with the CPUC, should conduct a thorough evaluation to find out.

- **Should a separate market structure be created for the full range of DG technologies (i.e., DG aggregation, DG Power Exchange, etc.)?**

We do not know what this question means. The ISO has implemented a pilot DG aggregation program and PG&E supports this. Absent more information on the scope and purpose of a "DG Power Exchange," PG&E reserves comment on the idea. PG&E opposes any suggestion that the late Cal PX should resume operation under the rules in place before PG&E and SCE became insolvent.

- **Should regulatory rules be changed to support the development of microgrids?**

As discussed above, the answer is "No." The proponents of microgrids have a long way to go to prove that it is in the public interest to remove distribution from regulatory oversight, from both a rates and a safety perspective. It is not good public policy to encourage the establishment of a number of "mini-utilities" without the full charter of responsibilities that regulated utilities now have.

- **Does the suspension of direct access impact the marketability of DG?**
- **Does the imposition of "exit fees" impact the marketability of DG?**

The answer to both questions is "yes"; these regulatory changes can impact the marketability of DG. Depending on the rules adopted, such changes could enhance the marketability of DG. It is not clear from the question exactly what the exit fees are intended to recover. We presume they refer to costs DWR incurred in providing power on behalf of customers prior to the installation of DG on their premises. In particular, if no exit fee is imposed on customers who install self-generation, then the suspension of direct access will leave self-generation as the only alternative for customers who wish to avoid DWR or utility power supply costs. However, if an exit fee applies to such projects, then that would adversely impact the marketability of DG, as could the inability of DG projects to take advantage of direct access.

PG&E supports continuing direct access at current levels. However, PG&E believes that it is only fair that customers taking advantage of such transactions not be able to escape their

appropriate responsibility for costs associated with the wholesale electric crisis, specifically the undercollection in procurement costs during 2000 and 2001 and the above-market costs of DWR's long-term contracts entered into with the expectation that DWR would be procuring the power for this load.

- **Should standards for control/communications be developed to better enable DG to participate in markets?**
- **Should the DG market paradigm shift towards decentralized rather than centralized control?**

It is not clear what these questions are asking. In the DG OIR, the CPUC asked about the extent to which utilities need to control DG, and the answer was not very often. It is correct that such control is one of the factors needed if the utilities are to use such sources to allow the utility to defer costly investments in traditional distribution facilities. However, that does not appear to be the subject of this question. It is not at all clear to PG&E that decentralized generation is better than central station generation, particularly if the decentralized generation is less efficient or more expensive than other supply or demand side energy alternatives.

3. Comments on "Strategy Options and Goals" Section

The CEC proposes the following near term goals, in the next 3-5 years, and PG&E offers the following suggestions on each proposed goal:

Fund research programs that will assist in the development and deployment of distributed generation technologies.

Yes, the CEC should definitely explore whether there are cost effective opportunities to help develop new DG technologies that would be more efficient and clean than current technologies. It is not clear that there are cost effective research opportunities concerning DG "deployment."

Address institutional and regulatory issues that interfere with purchasing, installation, and operation of distributed generation facilities.

PG&E supports the CEC's continued efforts to improve the interconnection rules, and believes that the CEC's continued work in this area would be valuable. PG&E opposes relitigation before the CEC of policy issues that took up nearly a month of hearing time before the CPUC in 2000 in the DG OIR, most of which remain undecided. PG&E is not aware of any other issue that this agency should be addressing, other than its

review of the cost effectiveness of current subsidies, and administration of subsidies which are found to be cost effective.

Provide incentives that encourage the deployment of distributed generation, with additional incentives afforded to "environmentally preferred" technologies.

If the CEC and CPUC hold hearings and find that such incentives are a cost-effective method of meeting public policy goals, then they should continue, and be administered by the CEC. If not, such incentives should be terminated.

Establish a DG State Agency Coordination Group to cooperatively address distributed generation issues and ensure consistent handling of these issues throughout state government.

By all means, the CEC and the CPUC are capable of doing a better job of coordination than they have done on DG issues, as is illustrated by the CPUC's process of adopting the self-generation incentive structure despite comments by the CEC indicating that cost effectiveness had not been demonstrated. Many other California agencies also have a role in this policy development. At the moment, the California Department of Water Resources remains in the business of meeting the net open position for all three state investor-owned utilities, and DG is one of the potential supply sources which DWR may continue to explore. The State Power Authority has indicated that if it obtains financing, it will purchase power from many smaller plants, particularly if they use renewable fuels. The Electric Oversight Board also has some role in this policy setting process. In addition, the California ISO recently adopted a pilot program to buy power from projects smaller than one megawatt. The various state agencies should begin to work together on these policy issues. That coordination should begin now, rather than waiting for the CEC to complete it Strategic Plan. Indeed, the CEC should include these various other agencies in the formation of its Strategic Plan, so that there is no conflict among state agencies on the issues addressed in the Plan.

Raise consumer awareness about distributed generation.

The CEC has made information about DG available via its internet for a long time. This is a worthy effort that should be continued. It may not be cost effective for the government to spend a lot of money on television or print advertising about DG.

4. Conclusion

It is time for the CEC and the CPUC together to examine what level of subsidies is appropriate to meet the state's energy needs. The combination of tax credits, exemptions from standby and other charges, as well as hundreds of millions of dollars of direct subsidies, may be too low or too high, but no state agency has taken a look at that cost effectiveness analysis. If more or less should be spent, then rates and DG incentives could be adjusted, so that the amounts charged to other customers and taxpayers to provide these DG subsidies is set at the appropriate level. As part of this review, the CEC and CPUC should consider the appropriate levels of DG subsidies given there are non-DG alternatives (central station generation, energy efficiency programs) that DG is competing with to solve supply shortages.

PG&E appreciates the opportunity to discuss these interesting issues with the Commission.

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